

EVENSON, McKEOWN, EDWARDS & LENAHA, P.L.L.C.
1200 G Street, N.W., Suite 700
Washington, D.C. 20005
(202) 628-8800

August 11, 2000

Box PATENT APPLICATION

Commissioner for Patents
Washington, D.C. 20231

Re: New U.S. Patent Appln.

Our Ref: 381NP/49131

Sir:

Transmitted herewith for filing is the patent application of:

Kimio MIYASHITA; Kunito NAKATSURU; Masahiro ZAITSU and Koichi ONO

entitled: **ENGINE CONTROL DEVICE**

Enclosed are:

1. Specification, including 11 claims (pages 1-23).
2. 4 Sheets of X Formal _____ Informal drawings showing Figs. 1, 2, 3 and 4.
3. X Declaration and Power of Attorney (**executed**).
4. Assignment of the invention to Hitachi, Ltd. and Hitachi Car Engineering Co., Ltd.
5. Certified copy of Priority Document 11 228444 filed in Japan on 12 August 1999, the priority of which is being claimed under 35 U.S.C. §119 and 37 C.F.R. §1.55.
6. X Information Disclosure Statement.
7. The filing fee has been calculated as shown below:

Basic Fee				\$345/690 = \$690.00
Total Claims	<u>11</u>	- 20 =	<u>0</u>	x \$ 9/18 = \$
Independent Claims	<u>2</u>	- 3 =	<u>0</u>	x \$39/78 = \$
Multiple Dependent Claim Presented				\$130/260 = \$
Total Filing Fee				<u>\$690.00</u>

Checks in the amount of \$ 690.00 for X filing fee and \$40.00 for X assignment recording fee are enclosed.

The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment, to Deposit Account No. 05-1323 (Docket #381NP/49131). A duplicate copy of this sheet is enclosed.

Respectfully submitted,

Gary R. Edwards
Gary R. Edwards
Reg. No! 31,824

GRE:kms

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Kimio MIYASHITA et al
Serial No.: NOT YET ASSIGNED
Filed: AUGUST 11, 2000
Title: ENGINE CONTROL DEVICE

PRELIMINARY AMENDMENT

Box Amendment

August 11, 2000

Commissioner for Patent
Washington, D.C. 20231

Sir:

Please enter the following amendments to the claims prior
to the examination of the application.

IN THE CLAIMS:

Please amend the claims as follows:

Claim 4, line 1, delete "or 3".

Claim 6, line 1, delete "or 3".

Claim 10, line 1, change "claims 1 to 9" to --claim 1--.

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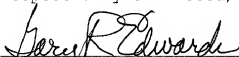
REMARKS

Entry of the amendments to the claims before examination of the application is respectfully requested. These claims have been amended to remove multiple dependencies.

If there are any questions regarding this Preliminary Amendment or this application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

It is respectfully requested that, if necessary to effect a timely response, this paper be considered as a Petition for an Extension of Time sufficient to effect a timely response and shortages in other fees, be charged, or any overpayment in fees be credited, to the Account of Evenson, McKeown, Edwards & Lenahan, P.L.L.C., Deposit Account No. 05-1323 (Docket #381NP/49131).

Respectfully submitted,


Gary R. Edwards
Registration No.

EVENSON, MCKEOWN, EDWARDS
& LENAHA, P.L.L.C.
1200 G Street, N.W., Suite 700
Washington, DC 20005
Telephone No.: (202) 628-8800
Facsimile No.: (202) 628-8844
GRE:kms

TITLE OF THE INVENTION

ENGINE CONTROL DEVICE

5 BACKGROUND OF THE INVENTION

The present invention relates to an engine control device, and especially relates to an engine control device for screening an integrated circuit by a status that implemented in circuit board.

10 Conventionally in a semiconductor integrated circuit for an engine control device of a vehicle, a chip which is cut out from a wafer is screened after having been protected by a package, and after the initial failure that is a latent defect is removed from the integrated circuit,
15 the chip is implemented in a circuit board.

In the semiconductor integrated circuit of late years, the integrated circuit is mounted on a circuit board by bare chip status without using the package in order to reduce mounting size or area, to improve electrical
20 characteristics, and to achieve reduction of manufacturing cost.

In this case, it is not effective as a lot of time is needed, to individually screen the integrated circuit which is in the bare chip status before mounting it on the
25 circuit board, and it is expected to screen the integrated circuit after mounting it.

In the conventional equipment which screens the

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integrated circuit of the bear chip status on the circuit board, a voltage regulator is provided in the circuit board, when the voltage change over signal is output by a communication signal from an outside communications means, 5 the voltage occurring in the resistor is amplified to be a high voltage (burn-in voltage) by an amplifier circuitry, and the screening is performed by adding said high voltage in said integrated circuit (For example, Japanese Patent Laid-open No. 09-304481 and 10-009041 are referred to).

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10 By the way, in Japanese Patent Laid-open No. 09-304481 bulletin, it is disclosed to screen by adding a burn-in voltage on the integrated circuit after mounting it, wherein the conventional equipment needs a voltage supervisory circuit and a communications means other than a 15 voltage regulator having a resistor, an amplifier, etc. and the constitution thereof becomes to be complicated, and any particular care-and-attention is not done relating to reduction of manufacturing cost by diminution of material number of items and number of production process as a characteritic feature in a case to mount on the circuit 20 board by the bear chip status.

Furthermore, in a technique disclosed in Japanese Patent Laid-open No. 10-009041 bulletin, although any communications means from external is not needed, 25 constitution of said voltage regulator and said voltage supervisory circuit are the same, Japanese Patent Laid-open No. 09-304481 bulletin does not disclose anything relating

to the reduction of the manufacturing cost.

SUMMARY OF THE INVENTION

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The present invention is invented referring to such
5 subject stated above, and an object of the present
invention is to provided an engine control device having a
voltage adjustment circuitry by screening a semiconductor
integrated circuit mounted on a circuit board in bear chip
status so as to reduce a mounting area thereof, improve
10 electric characteristics and reduce manufacturing cost by
planning a simple constitution.

In order to achieve the above stated object, an engine
control device in the present invention is characterized by
comprising an integrated circuit basically such as an
15 arithmetic processing unit etc. for processing operation of
control programs, and an output voltage adjustment
circuitry to switch a rated voltage to screen said
integrated circuit, wherein said output voltage adjustment
circuitry comprises plural resistors provided between an
20 output side power line of said rated voltage and a gland
side.

Furthermore, the preswent invention is characterized
in that said engine control device adds a higher voltage
value than that in usual operation on said integrated
25 circuit when screening said integrated circuit, and said
output voltage adjustment circuitry is connected to an
other resistor connected to said gland side and a

connecting point between said plural resistors is connected to said other resistor and is connected to said constant voltage source circuitry which outputs said rated voltage to said integrated circuit.

5 As the engine control device of ob the present invention constituted as stated above, comprises the output voltage adjustment circuitry to switch the rated voltage to screen the integrated circuit, said output voltage adjustment circuitry being constituted with three resistors
10 at least, all integrated circuits can be screened after being mounted by a low cost constitution without constituting a complicated circuitry, and it becomes possible to reduce manufacturing cost and to save time of screening.

15 Furthermore, a concrete aspect of the engine control device in the present invention, is characterized in that the other resistor is connected with the gland side by switching on/off.

20 Furthermore, the concrete aspect of the engine control device in the present invention, is characterized in that said other resistor is provided in external of said engine control device, or is connected to a connecting point between said plural resistors through a non-used terminal of said engine control device,

25 Furthermore, a concrete aspect of the engine control device in the present invention, is characterized in that the other resistor is provided in internal of said engine

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control device, or switches on/off based on a serial communication signal.

Furthermore, the concrete aspect of the engine control device in the present invention, is characterized in that

5 said arithmetic processing unit has a storage device to be capable of rewriting said control program by said serial communication signal so as to switch on/off, or

said arithmetic processing unit has a control program to switch over said rated voltage by said serial communication
10 signal so as to switch on/off.

In the engine control device of the present invention constituted as above, as the program is rewritten with the serial communication signal or is constituted to be switched, all integrated circuit after being mounted can be
15 screened in a case any non-used terminal is not provided.

Furthermore, the control device in the present invention is characterized by comprising said control device comprises an integrated circuit such as an arithmetic processing unit etc. for processing operation of
20 control programs, an output voltage adjustment means to switch a rated voltage to screen said integrated circuit, and a check means to examine characteristic of said arithmetic processing unit and said integrated circuit.

25 BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a block diagram of the engine control device as the first embodiment configuration of the present

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invention.

Figure 2 is a block diagram of the engine control device as the second embodiment configuration of the present invention.

5 Figure 3 is a block diagram of the engine control device as the third embodiment configuration of the present invention.

Figure 4 is a timing chart which explains operating of the engine control device shown in figure 3.

10

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

One embodiment configuration of the engine control device in the present invention will be explained in detail using figures as follows.

15 Figure 1 is a block diagram to show first embodiment configuration of the engine control device.

An engine control device 107 is constituted with a constant voltage source circuitry 100, an arithmetic processing unit (CPU) 111, and an integrated circuit (IC) 112, 113 etc. such as the CPU etc. and the CPU 111 and the integrated circuit 112, 113 are mounted on a circuit board in bear chip status .

25 Furthermore, the engine control device 107 takes in a signal from a crank angle sensor (illustration is omitted) and detecting signals from other various sensors (illustration is omitted), and processes based on detecting signals, so as to output a driving signal to fuel injection

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valves (illustration is omitted) and outputs an ignition driving signal to a spark plug (illustration is omitted), and the engine control device 107 is constructed with an input circuit (illustration is omitted), an AD conversion part (illustration is omitted), a storage device POM (illustration is omitted), and an output circuit (illustration is omitted). The input circuit takes in an input signal (for example, signals from a coolant temperature sensor, a crank angle sensor, and an air fuel ratio sensor etc.) and removes noise component from the input signal so as to supply the input signal to an AD conversion part. The AD conversion part converts the input signal and it is output into the CPU 111. The CPU 111 takes in the signal converted by the AD conversion and executes a predetermined control program stored in the ROM, thereby has a function to execute control of the device. Further, the operation result and the AD conversion result are stored temporarily in the RAM and the operation result of is output as a control output signal through the output circuit so as to be used to control the fuel injection valves.

Furthermore, the engine control device 107 is connected with a check equipment (a screening equipment) 108 through a connector in order to screen the CPU 111 and the integrated circuits 112, 113, and after having screened the integrated circuits 112, 113, characteristics of the CPU 111 and the integrated circuits 112, 113 are checked so

as to distinguish good or bad thereof, then, after being separated from the check instrument 108, only a good device is adopted to an actual machine as the engine control device 107.

5 The check instrument 108 is capable of supplying the battery voltage 304 to a constant voltage source circuitry 100 of the engine control device 107 through an input side power line 109, thereby the constant voltage source circuitry 100 is connected with an output voltage
10 adjustment circuitry 150, and the output voltage adjustment circuitry 150 switches the rated voltage so as to screen the integrated circuits 112, 113.

 The constant voltage source circuitry 100 is a variable output type one and constructed with a current
15 source 114, a reference voltage source 104, a start up circuitry 115, an error amplifier 116, and a transistor 117, and outputs a constant rated voltage (for example, 5V) to the CPU 111 and the integrated circuits 112, 113 through the output side power line 110.

20 The output voltage adjustment circuitry 150 switches said rated voltage as stated above so as to screen the CPU 111 and the integrated circuits 112, 113 and is constructed with resistors 101, 102, 106 and an electric switch 105, and the resistor 101 and the resistor 102 are connected in
25 series between the output side power line 110 of the rated voltage and the gland side. On the other hand, the other resistor 106 to be different from the resistors 101, 102,

is provided in an other output voltage adjustment circuitry 150a inside of the check equipment 108, one end thereof is connected to the gland side through the electric switch 105, and another end thereof is connected with a connecting point 103 between the resistors 101, 102, and it is connected with the resistor 102 in parallel by turning the electric switch 105 on.

In addition, the other resistor 106 is connected with the connecting point 103 between the resistors 101, 102 through non-used terminal of the engine control device 107, and is simultaneously connected with a reference voltage source 104 of the constant voltage source circuitry 100.

The screening for the CPU 111 and the integrated circuits 112, 113 is performed as follows.

At first, the battery voltage 304 is supplied to the engine control device 107 by the check equipment 108 through the input side power line 109, and the constant voltage source circuitry 100 supplies a source voltage of the usual constant rated voltage (for example, 5V) to the CPU 111 and the integrated circuits 112, 113 through output side power line 110, thereby the CPU 111 and the integrated circuits 112, 113 start to operate.

This voltage value of the connecting point 103 in a usual time (intermediate voltage value) is determined according to a ratio of the resistor 101 and the resistor 102 connected in series, and the constant rated voltage is maintained by comparing the intermediate voltage value with

a voltage value of the reference voltage source 104 with the error amplifier 116.

In the other, when screening, the voltage value of the connecting point 103 (intermediate voltage value) is
5 determined to be switched according to a ratio of the resistors 102 and 106 connected in parallel and the resistor 101 connected therewith in series, by turning the electric switch 105 of the output voltage adjustment circuitry 150, and a voltage value which is higher than
10 that in the usual time is supplied to the CPU 111 and the integrated circuit 112, 113 through the output side power line 110 so as to screen them.

After finishing the screening, the electric switch 105 is turned off, and the characteristic of the device is
15 tested with the check equipment 108 after a predetermined time from the finishing, then the initial failures being a potential defect of the CPU 111 and the integrated circuit 112, 113 are removed by checking the function of the engine control device 107.

Figure 2 is a block diagram which shows a second
20 embodiment configuration of the engine control device, and as figure 2 shows the same construction as figure 1 besides a CPU 200 and an output voltage adjustment circuitry 250, and only the CPU 200 and the output voltage adjustment
25 circuitry 250 will be explained in detail.

Said CPU 200 builds in a ROM (a flash ROM) which is capable of rewriting the control program and controls the

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intermediate voltage of the connecting point 103 by the rewritten control program. The output voltage adjustment circuitry 250 is used to switch the rated voltage in order to screen the integrated circuit 112,113 and is constructed with the resistors 101, 102, 201 and the transistor 204, and the resistor 101 and the resistor 102 are connected in series between the output side power line 110 of the rated voltage and the gland side. On the other hand, the other resistor 201 to be different from the resistors 101, 102, is provided inside of the engine control device 107, one end thereof is connected to the gland side through the electric switch 105, and one end thereof is connected with ground side of the transistor 204 and another end thereof is connected with the connecting point 103 between the resistors 101, 102, and it is connected with the resistor 102 in parallel by turning the electric switch 204 on.

In addition, in an outside of the engine control device 107, a serial communication means 203 is arranged, and the CPU 200 is switched into a write mode by being transmitted the output signal and the control program from the serial communication means 203, and simultaneously the control program of the flash ROM in the CPU 200 is rewritten.

In the usual time, by using the serial communication means 203, a program to fix output of a port 202 of the CPU 200 to be a low level is written in the flash ROM, the transistor 204 is turned off, and the

The intermediate voltage value is determined according to a ratio of the resistors 101 and 102 connected in series.

On the other hand, when screening, a program to fix the output of the port 202 of the CPU 200 to be a high level is written in the flash to be rewritten by the serial communication means 203, and the serial communication means 203 turns on the transistor 204 and determines the voltage value of the connecting point 103 (intermediate voltage value) so as to switch it based on a ratio of the resistors 102 and 106 connected in parallel and the resistor 101 connected in series therewith, and the voltage value which is higher than that in the usual time is supplied on the CPU 200 and the integrated circuit 112, 113 through the output side power line 110 so as to screen thereof.

After finishing the screening, the program to fix the output of the port 202 to be low level again is rewritten on the flash ROM by a serial communication means 203, thereby the transistor 204 is turned off and characteristics of the device is checked with the check equipment 108 after a predetermined time has passed, then the initial failures being a potential defect of the CPU 200 and the integrated circuit 112, 113 are removed by checking the function of the engine control device 107.

Figure 3 is a block diagram which shows a third embodiment configuration of the engine control device, and as figure 3 shows the same construction as figure 2 besides a CPU 300 and only the CPU 300 will be explained in detail.

The CPU 300 builds in the control program to switch a program to fix the output of the port 309 to be the low level and a program to fix the output of the port 309 to be the high level mutually so as to control the intermediate
5 voltage of the connecting point 103.

The output voltage adjustment circuitry 303 is constituted in the same way as output voltage adjustment circuitry 250 shown in figure 2, has the resistor 101, 102 and 201 and the transistor 204, and switches the rated
10 voltage in order to screen the integrated circuits 112, 113.

The resistors 101 and 102 is connected in series between the output side power line 109b of the rated voltage and the gland side. The one end of the other resistor 201 is connected to the gland side through the
15 transistor 204, and the other end of the resistor 201 is connected with the connecting point 103 between the resistors 101, 102 and is connected with the resistor 102 in parallel by turning the transistor 204 on.

In the usual time, a program to fix the output of the port 309 of the CPU 300 to be the low level is designated
20 by the serial communication means 203 so as to turn the transistor 204 off, and when performing the screening, a program to fix the output of the port 309 of the CPU 300 to be the high level is designated by the serial communication
25 means 203 so as to turn the transistor 204 on, and the voltage value which is higher than that in the usual time is supplied to the CPU 300 and the integrated circuits 112,

113 through the output side power line 110 so as to screen them. After the screening is completed, the program to fix the output of the port 309 to be the low level is designated, the transistor 204 is turned off, and after the
5 predetermined time has passed, the characteristic of the device is checked by the check equipment 108, then the initial failures being a potential defect of the integrated circuits 112, 113 are removed by checking the function of the engine control device 107.

10 Figure 4 is a timing chart of operating of the engine control device shown by figure 3.

At first, the battery voltage 304 is applied to engine control device 107 through the input side power line 109a by using the check equipment (a screening test device) 108,
15 and the constant voltage source circuitry 100 supplies a source voltage having the constant rated voltage (for example, 5V) in the usual time to the CPU 300 and the integrated circuit 112, 113 through the output side power line 109b so as to start to operate the CPU 300 and the
20 integrated circuit 112, 113.

In the next, when a high voltage switching designation is transmitted to the communication line 301a from the serial communication means 203 of the check equipment 108, the CPU 300 receives the high voltage switching designation
25 signal 305 through the serial receiver circuit 301, the high voltage switching designation signal 305 is output by the output voltage adjustment circuitry 303 so as to turn

the transistor 204 on, and the output voltage value of the constant voltage source circuitry 100 is changed to be the high voltage value (7V, for example) for the screening.

In addition, the CPU 300 transmits a change over completion signal 307 to the communication line 302a through a serial transmitting circuit 302 and the signal 307 is returned to the check equipment 108.

Then, after having applied the high voltage in the predetermined time that is necessary for the screening, when the rated voltage switch over designation is transmitted to the communication line 301a from the serial communication circuitry 203 of the check equipment 108, the CPU 300 receives the rated voltage change over designation signal 306 through the serial receiver circuit 301, the rated voltage change over designation signal 306 is output to the output voltage adjustment circuitry 303, the transistor 204 is turned off, and the output voltage value of the constant voltage source circuitry 100 is changed to be the rated voltage (5V, for example).

In addition, the CPU 300 transmits the change over completion signal 308 to the communication line 302a through the serial transmitting circuit 302, and the signal 308 returned to the check equipment 108.

Then, after the predetermined time has passed from the finishing of the screening, the characteristic of the device is tested by the check equipment 108, and the initial failures being potential defects of the integrated

circuits 112, 113 are judged by checking the function of the engine control device 107.

As stated above, the embodiment configuration in the present invention has following function based on the constitution mentioned above.

The engine control device 107 in the first embodiment configuration of the present invention comprises the CPU 111 to operate the program, integrated circuits 112, 113, the ROM to store the program, the constant voltage source circuitry 100 to output the rated voltage to the integrated circuits 112, 113 etc. and the output voltage adjustment circuitry 150 to switch the rated voltage in order to screen the integrated circuits 112, 113 mounted on the circuit board.

The output voltage adjustment circuitry 150 is connected to other output voltage adjustment circuitry 150a so as to connect the resistors 101, 102, 106 with the electric switch 105, the resistors 101 and 102 are connected in series between the output side power line 110 of the rated voltage and the gland sides, one end of the other resistor 106 is connected to the gland side and other end thereof is connected to the connecting point 103 of the resistors 101, 102 and the other resistor 106 is connected with the resistor 102 in parallel by turning the electric switch 105 on, and the reference voltage source 104 of the constant voltage source circuitry 100 is connected with the connecting point 103 between the resistors 101, 102 through

the non-used terminal A of the engine control device 107.

Therefore, the screening of all integrated circuits 112, 113 after being mount can be performed at a time by changing the intermediate voltage of connecting point 103
5 without providing the complicated circuitry and the outside output signal means especially, reduction of the manufacturing cost and shortening of the time of the screening can be planned.

In the above embodiment configuration further, the
10 voltage value is changed for the screening, and the reduction of the power consumption can be planned by using the change of this voltage value for engine control. In the engine control device 107 in the second embodiment configuration, the CPU 200 builds in the ROM (flash ROM) in
15 which the program thereof is capable of being rewritten, the program of the CPU 200 is written in by the serial communication means 203, thereby the transistor 204 of the output voltage adjustment circuitry 250 is switched on or off so as to change the intermediate voltage of the
20 connecting point 103, and in a case of an engine control device having a limited terminal and not having a non-used terminal A, the screening of the integrated circuits 112, 113 after mounting can be performed.

Furthermore, in the engine control device 107 of third
25 embodiment configuration, the CPU 300 build in the control program to mutually switch a program to fix output of the port 309 of the CPU 300 to be in the low and a program to

fix output of the port 309 to be in the high level according to the output signal from the serial communication means 203, the programs of the CPU 300 are switched by the serial communication means 203, thereby, 5 the transistor 204 of the output voltage adjustment circuitry 303 is switched on or off and the intermediate voltage of the connecting point 103 can not be changed, and if the engine control device does not have non-used terminal A and the CPU does not have the flash ROM, the 10 screening of the integrated circuit 112, 113 after mounting can be performed.

Although the embodiment configuration of the present invention is explained in detail as above, the present invention is not limited to the above embodiment 15 configuration, various kinds of modification are possible in design without deviating from the present invention mentioned in the claims

For example, in the first embodiment configuration, the output voltage adjustment circuitry is divided into the 20 engine control device and the check equipment, however this circuitry may be provided as one body in the engine control device.

In addition, the check equipment is not limited to be used for only the engine control device, and by providing 25 the output voltage adjustment circuitry and the characteristic check circuit as the control device of the integrated circuit mounted as the bear chip status, the

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creening of the integrated circuit and the function test can be performed.

As being apparent from the above-mentioned description, the engine control device in the present invention can
5 perform the screening of the semiconductor integrated circuit mounted as the bare chip status on the circuit board by arranging the output voltage adjustment circuit, and reduction of the mounting area size and improvement of the electrical characteristic nature becomes possible and
10 reduction of the manufacturing cost can be planned too by a simple constitution thereof.

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What is claimed is;

1. An engine control device comprising an integrated circuit such as an arithmetic processing unit etc. for processing operation of control programs, characterized in that

said engine control device comprises an output voltage adjustment circuitry to switch a rated voltage to screen said integrated circuit, and

said output voltage adjustment circuitry comprises plural resistors provided between an output side power line of said rated voltage and a gland side.

2. An engine control device as defined in claim 1, said engine control device characterized in that

said output voltage adjustment circuitry is connected to an other resistor connected to said gland side, and

a connecting point between said plural resistors is connected to said other resistor and is connected to said constant voltage source circuitry which outputs said rated voltage to said integrated circuit.

3. An engine control device as defined in claim 2, said engine control device characterized in that

said other resistor is connected to said gland side by change over a switch on/off.

4. An engine control device as defined in claim 2 or 3, said engine control device characterized in that said other resistor is provided outside of said engine control device.

5. An engine control device as defined in claim 4, said

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engine control device characterized in that said other resistor is connected to a connecting point between said plural resistors through a non-connected terminal of said engine control device.

- 5 6. An engine control device as defined in claim 2 or 3, said engine control device characterized in that

said other resistor is provided inside of said engine control device.

7. An engine control device as defined in claim 6, said
10 engine control device characterized in that

said other resistor is switched on/off by a serial communication signal.

8. An engine control device as defined in claim 7, said engine control device characterized in that

- 15 said arithmetic processing unit has a strage device to be capable of rewriting said control program by said serial communication signal so as to switch on/off.

9. An engine control device as defined in claim 7, said engine control device characterized in that

- 20 said arithmetic processing unit has a control program to switch over said rated voltage by said serial communication signal so as to switch on/off.

10. An engine control device as defined in claims 1 to 9, said engine control device characterized in that

- 25 said engine control device adds a higher voltage value than that in usual operation on said integrated circuit when screening said integrated circuit.

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11. A control device comprising an integrated circuit of an arithmetic processing unit for operating a control program, comprising

an output voltage adjustment means to switch over a
5 rated voltage to screen said integrated circuit, and

a check means to examine a characteristic of said arithmetic processing unit and said integrated circuit.

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ABSTRACT OF THE DISCLOSURE

In order to provide an output voltage adjustment circuit which is able to perform the screening of the semiconductor integrated circuit mounted as the bear chip status on the circuit board, and to plan reduction of the mounting area size and improvement of the electrical characteristic nature and reduction of the manufacturing cost by a simple constitution thereof, an engine control device having a control device of the integrated circuit of the arithmetic processing unit for operating the control program, is provided, and said engine control device has an output voltage adjustment circuitry to switch the rated voltage to screen the integrated circuit, and said output voltage adjustment circuitry has plural resistors between the output side power line of the rated voltage and the gland sides.

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FIG. 2

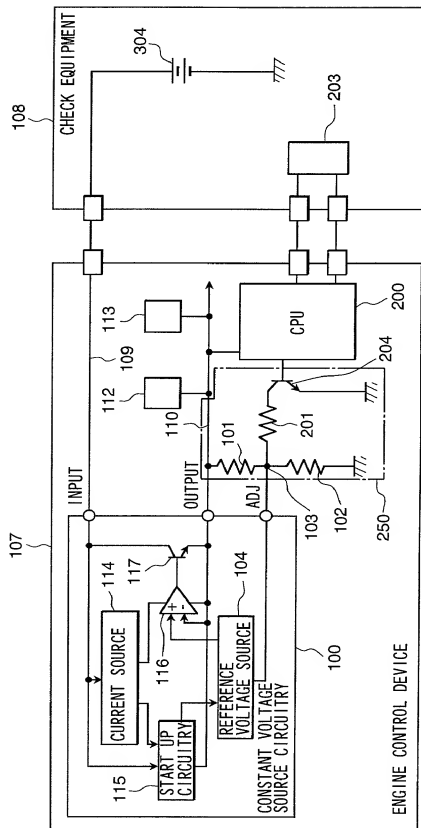


FIG. 3

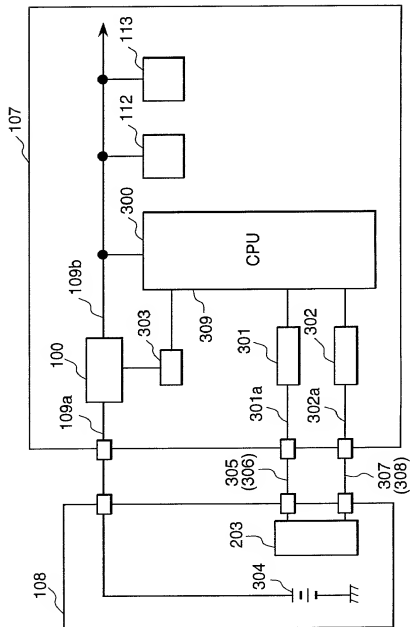
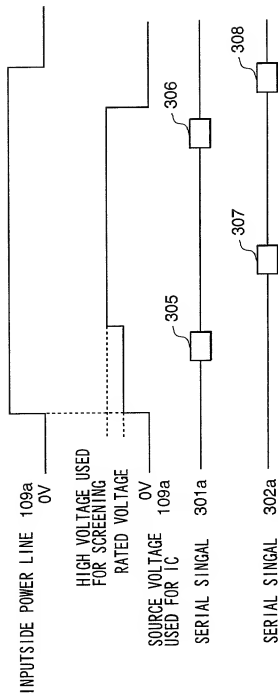


FIG. 4



Declaration and Power of Attorney For Patent Application

特許出願宣言書及び委任状

Japanese Language Declaration

日本語宣言書

下記の氏名の発明者として、私は以下の通り宣言します。

As a below named inventor, I hereby declare that:

私の住所、私書箱、国籍は下記の私の氏名の後に記載された通りです。

My residence, post office address and citizenship are as stated next to my name.

下記の名称の発明に関して請求範囲に記載され、特許出願している発明内容について、私が最初かつ唯一の発明者（下記の氏名が一つの場合）もしくは最初かつ共同発明者であると（下記の名称が複数の場合）信じています。

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

ENGINE CONTROL DEVICE

上記発明の明細書（下記の欄で×印がついていない場合は、本書に添付）は、

The specification of which is attached hereto unless the following box is checked:

☐ 月 日に提出され、米国出願番号または特許協定条約
国際出願番号を _____ とし、
(該当する場合) _____ に訂正されました。

☐ was filed on
as United States Application Number or
PCT International Application Number
_____ and was amended on
_____ (if applicable).

私は、特許請求範囲を含む上記訂正後の明細書を検討し、内容を理解していることをここに表明します。

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

私は、連邦規則法典第37編第1条56項に定義されるとおり、特許資格の有無について重要な情報を開示する義務があることを認めます。

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

Japanese Language Declaration (日本語宣言書)

私は、米国法典第35編119条 (a) - (d) 項又は365条 (b) 項に基づき下記の、米国以外の国の少なくとも一カ国を指定している特許協力条約365 (a) 項に基づく国際出願、又は外国での特許出願もしくは発明者証の出願についての外国優先権をここに主張するとともに、優先権を主張している、本出願の前に出願された特許または発明者証の外国出願を以下に、枠内をマークすることで、示している。

Prior Foreign Application(s)

外国での先行出願

11-228444	Japan
(Number)	(Country)
(番号)	(国名)
(Number)	(Country)
(番号)	(国名)

私は、第35編米国法典119条 (e) 項に基づいて下記の米国特許出願規定に記載された権利をここに主張いたします。

(Application No.)	(Filing Date)
(出願番号)	(出願日)

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(Application No.)	(Filing Date)
(出願番号)	(出願日)

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(出願番号)	(出願日)

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I hereby claim foreign priority under Title 35, United States Code, Section 119 (a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or 365(a) of any PCT international application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed.

Priority Not Claimed

優先権主張なし

12/August/1999	<input type="checkbox"/>
(Day/Month/Year Filed)	
(出願年月日)	
(Day/Month/Year Filed)	<input type="checkbox"/>
(出願年月日)	

I hereby claim the benefit under Title 35, United States Code, Section 119(e) of any United States provisional application(s) listed below.

(Application No.)	(Filing Date)
(出願番号)	(出願日)

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s), or 365(c) of any PCT international application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code Section 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of application.

(Status: Patented, Pending, Abandoned)
(現況: 特許許可済、係属中、放棄済)

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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Japanese Language Declaration
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委任状: 私は下記の発明者として、本出願に関する一切の手続きを米特許商標局に対して遂行する弁理士または代理人として、下記の者を指名いたします。(弁理士、または代理人の氏名及び登録番号を明記のこと)

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith (list name and registration number)

Martin Fleit, Reg. No. 16,900; Herbert I. Cantor, Reg. No. 24,392; James F. McKeown, Reg. No. 25,408; Donald D. Evenson, Reg. No. 26,160; Joseph D. Evans, Reg. No. 26,269; Gary R. Edwards, Reg. No. 31,824; Jeffrey D. Sanok, Reg. No. 32,169; Richard R. Diefendorf, Reg. No. 32,390; and Paul A. Schnose, Reg. No. 39,361

書類送付先

Send Correspondence to:

Evenson, McKeown, Edwards & Lenehan P.L.L.C. Suite 700
1200 G St., N.W., Washington, D.C. 20005

直接電話連絡先: (氏名及び電話番号)

Direct Telephone Calls to: (name and telephone number)

Telephone: (202)628-8800
Fax: (202)628-8844

唯一または第一発明者	Full name of sole or first inventor Kimio MIYASHITA
発明者の署名 日付	Inventor's signature Date <i>Kimio Miyashita</i> 7/17/2000
住所	Residence Hitachinaka, Japan
国籍	Citizenship Japan
私書箱	Post Office Address c/o Hitachi, Ltd., Intellectual Property Group New Marunouchi Bldg. 5-1, Marunouchi 1-chome, Chiyoda-ku, Tokyo 100-8220, Japan

(第二以降の共同発明者についても同様に記載し、署名をすること)

(Supply similar information and signature for second and subsequent joint inventors.)

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第二共同発明者	Full name of second joint inventor, if any
第二共同発明者の署名 日付	Kunito NAKATSURU Second inventor's signature Date 7/20/2000
住所	Residence Mito, Japan
国籍	Citizenship Japan
私書箱	Post Office Address c/o Hitachi, Ltd., Intellectual Property Group New Marunouchi Bldg. 5-1, Marunouchi 1-chome, Chiyoda-ku, Tokyo 100-8220, Japan
第三共同発明者	Full name of third joint inventor, if any
第三共同発明者の署名 日付	Masahiro ZAITSU Third inventor's signature Date 7/19/2000
住所	Residence Hitachinaka, Japan
国籍	Citizenship Japan
私書箱	Post Office Address c/o Hitachi Car Engineering Co., Ltd. 2477, Takaba, Hitachinaka-shi, Ibaraki 312-0062, Japan
第四共同発明者	Full name of fourth joint inventor, if any
第四共同発明者の署名 日付	Koichi ONO Fourth inventor's signature Date 7/15/2000
住所	Residence Naka, Japan
国籍	Citizenship Japan
私書箱	Post Office Address c/o Hitachi Car Engineering Co., Ltd. 2477, Takaba, Hitachinaka-shi, Ibaraki 312-0062, Japan
第五共同発明者	Full name of fifth joint inventor, if any
第五共同発明者の署名 日付	Fifth inventor's signature Date
住所	Residence
国籍	Citizenship
私書箱	Post Office Address

(第六以降の共同発明者についても同様に記載し、署名をすること)

(Supply similar information and signature for sixth and subsequent joint inventors.)